Ahmed Mokhtari
PHFR 010008

REMARKS

Reconsideration of the Office Action is respectfully requested.

Claims 1 to 9 are in the application.

The present invention is directed to a discharge lamp containing a radioactive gas for starting the lamp, which radioactive gas is enclosed in a capsule, a wall of which is transparent to the radioactive radiation.

This arrangement avoids the problem of cataphoresis, wherein unrestrained radioactive gas migrates to the negative electrode, sputters the electrode, and causes progressive consumption of the radioactive gas, thus shortening the life of the lamp.

By containing the radioactive gas in a capsule, its consumption is prevented. Additionally, the environment is protected, and the capsule can even be recycled or reused.

In accordance with a further improvement, in the case when the lamp is supplied with direct current the capsule is positioned close to the anode of the discharge lamp to facilitate starting.

Claims 1 to 9 stand rejected as being obvious under 35USC103 over Jackson U.S. patent No. 5,990,599 in view of Biro U.S Patent No. 5,739,633. This rejection is respectfully traversed.

The rejection is not tenable because Jackson does not disclose or suggest the use of a radioactive gas to ionize the fill for starting the lamp. Rather, Jackson discloses the use of an auxiliary lamp which emits ultraviolet radiation to ionize the fill.

The auxiliary lamp in Jackson utilizes a fill "of an inert gas, such as Ar in combination with a quantity of mercury, such as a Penning mixture." The position in the Office Action is that since krypton is also an inert gas, it would be obvious to substitute krypton for argon in the Jackson lamp. However, even if this is so, there is no teaching in Jackson to use a radioactive gas.

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Attached hereto are pages from Hawley's Condensed Chemical Dictionary, Eleventh Edition which contain definitions of krypton and krypton 85. It is clear from these definitions that elemental krypton is not radioactive, but rather that certain isotopes and artificial forms of the element may be radioactive. One of these is krypton 85, the exemplary substance which is mentioned as a lamp starting aid in the present application.

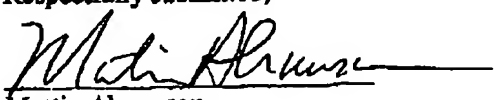
It is noted from the definitions that elemental krypton is present in air and may be obtained by fractional distillation of liquid air. On the other hand, it states that krypton 85 is a fission product extracted from irradiated nuclear fuel. Thus, these are very different entities.

It is clear that the most that the Jackson patent would teach the skilled worker is the use of a gas such as elemental krypton in the auxiliary lamp. Radioactive krypton is a special case which is far removed, and its use is not suggested in Jackson. Indeed, it is not likely that the skilled worker would use the radioactive form of a gas where a non-radioactive form would suffice because of difficulties in handling, cost, etc. of the radioactive material.

Thus, it is submitted that Jackson does not teach the use of a radioactive gas as a starting aid. Since the limitation of a radioactive gas enclosed in a capsule in the discharge lamp is present in all claims, it is submitted that all claims in the application are allowable.

In view of the above, Notice of Allowance is therefore respectfully solicited.

Respectfully submitted,



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Hawley's Condensed Chemical Dictionary

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1. Chemistry—Dictionaries. I. Hawley, Gessner
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Krohnke aldehyde synthesis. Transformation of benzyl halides into aldehydes via their pyridinium salts which, on treatment with p-nitrosodimethylaniline, give nitrones. Hydrolysis of the nitrones yields aldehydes.

Kroll process. A widely used process for obtaining titanium metal. Titanium tetrachloride is reduced with magnesium metal at red heat and atmospheric pressure, in the presence of an inert gas blanket of helium or argon. Magnesium chloride and titanium metal are produced. The reaction is $TiCl_4 + 2Mg \rightarrow Ti + 2MgCl_2$. Essentially the same process is also used for obtaining zirconium.

"Kromatherm."[209] TM for high-temperature pigments designed for silicone- and fluorocarbon resin-based paint vehicles.

"Kronitex."[65] TM for a series of synthetic phosphate esters to replace such natural products as tricresyl and cresyl diphenyl phosphates.
Use: Flame-retardant plasticizers for vinyls, dust filter medium, gas additives, wood-treating chemical, foam control.

krypton. CAS: 7439-90-9. Kr. Element of atomic number 36, noble gas group of the periodic system, aw 83.80, valence = 2 (possibly others), has six stable isotopes and a number of artificially radioactive forms.
Properties: Colorless, odorless gas. Bp 152.9C (1 atmosphere), fp −157.1C, d 2.818 (air = 1), sp vol 4.61 cu ft/lb (21C, 1 atmosphere), only slightly soluble in water. Known to combine with fluorine at liquid nitrogen temperature by means of electric discharges or ionizing radiation to make KrF_2 and KrF_4. These compounds decompose at room temperature. Noncombustible.
See noble gas.
Derivation: By fractional distillation of liquid air. Air contains 0.000108% of krypton by volume.
Use: Incandescent bulbs and fluorescent light tubes, lasers, high-speed photography.
Note: Solid krypton exists at cryogenic temperatures as a white, crystalline substance; mp 116K.

krypton 85. Radioactive krypton of mass number 85.
Properties: Half-life 10.3 Y; radiations, beta with a small component of gamma. Low radiotoxicity.
Derivation: A fission product extracted from irradiated nuclear fuel.
Forms available: Gas of high chemical purity, but mixed with other isotopes of krypton in sealed glass flasks.
See also kryptonates.
Use: Activation of phosphors for self-luminous markers, detecting leaks, medicine to trace blood flow.

krypton 86. Isotope of krypton used in measurement of standard meter.

kryptonates. Materials impregnated with krypton-85 in such a way that the radioactive atoms are held within the crystalline lattice structure. Elements, alloys, glasses, inorganic compounds, rubbers, and plastics have been so impregnated with tracer atoms.

"Krytox."[28] TM for a series of hexafluoropropylene epoxide polymers of medium molecular weight, used as lubricating oils and greases; in high temperature or corrosive conditions, good chemical inertness, even with boiling sulfuric acid; low solubility in most solvents; good lubricity under load; nonflammable; have thermal stability up to 260C.

K-Selectride.[541] TM for potassium tri-sec-butylborohydride, 1.0 molar solution in tetrahydrofuran. CAS: 54575-49-4.
$KB[CH(CH_3)C_2H_5]_3H$.
Properties: Moisture sensitive liquid with mw 222.27, d 0.913, fp -17C.
Hazard: Flammable liquid, handle under nitrogen.
Use: Stereoselective reduction of ketones; conjugate reduction and alkylation of alpha,beta-unsaturated ketones.

KTPP. Abbreviation for potassium tripolyphosphate.

Kucherov reaction. Hydration of acetylenic hydrocarbons with dilute sulfuric acid in the presence of mercuric sulfate or boron trifluoride as catalyst.

Kuhn, Richard. (1900-1967) A German chemist who won the Nobel prize in 1938. He worked on cartinoids and synthetic vitamins, and discovered chemical formula for vitamin B6. He also discovered method for dissolving symplexes from plants using invert-soaps. He received his PhD in Munich, and went on to teach in Switzerland.

Kuhn-Roth method for C-methyl determination. Oxidation of organic compounds with chromic and sulfuric acids in such a manner that the C-methyl groups are converted to acetic acid which can be assayed volumetrically. The method has been modified and extended (1) to saturated fatty acids and alcohols containing up to about 20 carbon atoms, and (2) to aliphatic long-chain compounds of very high molecular weight.